

Ethnicity Testing – A Conundrum

by Roberta Estes

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Ethnicity results from DNA testing. Fascinating. Intriguing. Frustrating. Exciting. Fun. Challenging. Mysterious. Enlightening. And sometimes wrong. These descriptions all fit. Welcome to your personal conundrum! The riddle of you! If you'd like to understand why your ethnicity results might not have been what you expected, read on!

Today, about 50% of the people taking autosomal DNA tests purchase them for the ethnicity results. Ironically, that's the least reliable aspect of DNA testing – but apparently somebody's ad campaigns have been very effective. After all, humans are curious creatures and inquiring minds want to know. Who am I anyway?

I think a lot of people who aren't necessarily interested in genealogy per se are interested in discovering their ethnic mix – and maybe for some it will be a doorway to more traditional genealogy because it will fan the flame of curiosity.

Given the increase in testing for ethnicity alone, I'm seeing a huge increase in people who are both confused by and disappointed in their results. And of course, there are a few who are thrilled, [trading their lederhosen for a kilt](#) because of their new discovery. To put it gently, they might be a little premature in their celebration.

A lot of whether you're happy or unhappy has to do with why you tested, your experience level and your expectations.

So, for all of you who could write an e-mail similar to this one that I received – this article is for you:

“I received my ethnicity results and I’m surprised and confused. I’m half German yet my ethnicity shows I’m from the British Isles and Scandinavia. Then I tested my parents and their results don’t even resemble mine, nor are they accurate. I should be roughly half of what they are, and based on the ethnicity report, it looks like I’m totally unrelated. I realize my ethnicity is not just a matter of dividing my parents results by half, but we’re not even in the same countries. How can I be from where they aren’t? How can I have significantly more, almost double, the Scandinavian DNA that they do combined? And yes, I match them autosomally as a child so there is no question of paternity.”

Do not, and I repeat, DO NOT, trade in your lederhosen for a kilt just yet.

This technology is not really ripe yet for that level of confidence except perhaps at the continent level and for people with Jewish heritage.

- 1 In determining majority ethnicity at the continent level, these tests are quite accurate, but then you can determine the same thing by looking in the mirror. I’m primarily of European heritage. I can see that easily and don’t need a DNA test for that information.
- 2 When comparing between continental ethnicity, meaning sorting African from European from Asian from Native American, these tests are relatively accurate, meaning there is sometimes a little bit of overlap, but not much. I’m between 4 and 5% Native American and African – which I can’t see in the mirror – but some of these tests can.
- 3 When dealing with intra-continent ethnicity – meaning Europe in particular, comparing one country or region to another, these tests are not reliable and in some cases, appear to be outright wrong. The exception here is Ashkenazi Jewish results which are generally quite accurate, especially at higher levels.

There are times when you seem to have too much of a particular ethnicity, and times when you seem to have too little.

Aside from the obvious adoption, misattributed parent or the oral history simply being wrong, the next question is why.

Ok, Why?

So glad you asked!

Part of why has to do with actual population mixing. Think about the history of Europe. In fact, let's just look at Germany. Wiki provides a [nice summary timeline](#). Take a look, because you'll see that the overarching theme is warfare and instability. The borders changed, the rulers changed, invasions happened, and most importantly, the population changed.

[...]

Reference Populations

The second challenge is obtaining valid and adequate reference populations.

Each company that offers ethnicity tests [assembles a group of reference populations](#) against which they compare your results to put you into a bucket or buckets.

Except, it's not quite that easy.

When comparing highly disparate populations, meaning those whose common ancestor was tens of thousands of years ago, you can find significant differences in their DNA. Think the four major continental areas here – Africa, Europe, Asia, the Americas.

Major, unquestionable differences are much easier to discern and interpret.

However, within population groups, think Europe here, it is much more difficult.

To begin with, we don't have much (if any) ancient DNA to compare to. So we don't know what the Germanic, French, Norwegian, Scottish or Italian populations looked like in, let's say, the year 1000.

[...]

Now, think about how much we don't know. There is no reason to believe the admixture and intermixing of populations on any other continent that was inhabited was any different. People will be people. They have wars, they migrate, they fight with each other and they produce offspring.

We are one big mixing bowl.

Software

A third challenge faced in determining ethnicity is how to calculate and interpret matching.

[...]

So assigning a specific "ethnicity" to you is a matter of finding the best fit – in other words which population you match at the highest frequency for the combined segments being measured.

Let's say that the company you're using has 50 people from each "grouping" that they are using for buckets.

A bucket is something you'll be assigned to. Buckets sometimes resemble modern-day countries, but most often the testing companies try to be less boundary aligned and more population group aligned – like British Isles, or Eastern European, for example.

How does one decide which “country” goes where? That’s up to the company involved. As a consumer, you need to read what the [company publishes about their reference populations](#) and their bucket assignment methodology.

For example, one company groups the Czech Republic and Poland in with Western Europe and another groups them primarily with Eastern Europe but partly in Western Europe and a third puts Poland in Eastern Europe and doesn’t say where they group The Czech Republic. None of these are inherently right or wrong – just understand that they are different and you’re not necessarily comparing apples to apples.

Two Strands of DNA

In the past, we’ve discussed the fact that you have two strands of DNA and they don’t come with a Mom side, a Dad side, [no zipper and no instructions](#) that tell you which is Mom’s and which is Dad’s. Not fair – but it’s what we have to work with.

When you match someone because your DNA is zigzagging back and forth between Mom’s and Dad’s DNA sides, that’s called [identical by chance](#).

It’s certainly possible that the same thing can happen in population genetics – where two strands when combined “look like” and match to a population reference sample, by chance.

[...]

Finding The Right Bucket

Our DNA, as humans, is more than [99.9% the same](#). The differences are where mutations have occurred that allow population groups and individuals to look different from one another and other minor differences. Understanding the degree of similarity makes the concept

of “race” a bit outdated.

For genetic genealogy, it’s those differences we seek, both on a population level for ethnicity testing and on a personal level for identifying our ancestors based on who else our autosomal DNA matches who also has those same ancestors.

[...]

The Exceptions and Minority Ancestry

You know, there is always an exception to every rule and this is no exception to the exception rule. (Sorry, I couldn’t resist.)

By and large, the majority continental ancestry will be the most accurate, but it’s the minority ancestry many testers are seeking. That which we cannot see in the mirror and may be obscured in written records as well, if any records existed at all.

Let me say very clearly that when you are looking for minority ancestry, the lack of that ancestry appearing in these tests does NOT prove that it doesn’t exist. You can’t prove a negative. It may mean that it’s just too far back in time to show, or that the DNA in that bucket has “washed out” of your line, or that we just don’t recognize enough of that kind of DNA today because we need a larger reference population. These tests will improve with time and all 3 major vendors update the results of those who tested with them when they have new releases of their ethnicity software.

Think about it – who is 100% Native American today that we can use as a reference population? Are Native people from North and South American the same genetically? And let’s not forget the tribes in the US do not view DNA testing favorably. To say we have challenges understanding the genetic makeup and migrations of the Native population is an understatement – yet those are the answers so many people seek.

[...]

In Summary

I hate to steal Judy Russell's line, but she's right – [it's not soup yet](#) if ethnicity testing is the only tool you're going to use and if you're expecting answers, not estimates. View today's ethnicity results from any of the major testing companies as interesting, because that's what they are, unless you have a very specific research agenda, know what you are doing and plan to take a deeper dive.

I'm not discouraging anyone from ethnicity testing. I think it's fun and for me, it was extremely informative. But at the same time, it's important to set expectations accurately to avoid disappointment, anxiety, misinformation or over-reliance on the results.

You can't just discount these results because you don't like them, and neither can you simply accept them.

If you think your grandfather was 100% Native American and you have no Native American heritage on the ethnicity test, the problem is likely not the test or the reference populations. You should have 25% and carry zero. The problem is likely that the oral history is incorrect. There is virtually no one, and certainly not in the Eastern tribes, who was not admixed by two generations ago. It's also possible that he is not your grandfather. View ethnicity results as a call to action to set forth and verify or refute their accuracy, especially if they vary dramatically from what you expected. If it's the truth you seek, this is your personal [doorway to Delphi](#).

Just don't trade in your lederhosen, or anything else just yet based on ethnicity results alone, because this technology is still in its infancy, especially within Europe. I mean, after all, it's embarrassing to have to go and try to retrieve your lederhosen from the pawn shop. They're going to laugh at you.

[...]

Ethnicity testing is like any other tool – it's just one of many available to you. You'll need to gather different kinds of DNA and other evidence from various sources and assemble the pieces of your ancestral story like a big puzzle. Ethnicity testing isn't the end, it's the beginning. There is so much more!

My real hope is that ethnicity testing will kindle the fires and that some of the folks that enter the genetic genealogy space via ethnicity testing will be become both curious and encouraged and will continue to pursue other aspects of genealogy and genetic genealogy. Maybe they will ask the question of "who" in their tree wore kilts or lederhosen and catch the genealogy bug. Maybe they will find out more about grandpa's Native American heritage, or lack thereof. Maybe they will meet a match that has more information than they do and who will help them. After all, ALL of genetic genealogy is founded upon sharing – matches, trees and information. The more the merrier!

So, if you tested for ethnicity and would like to learn more, come on in, the water's fine and we welcome both lederhosen and kilts, whatever you're wearing today! Jump right in!!!

